

## COAXIAL CABLE CONNECTOR

This application claims the priority benefit of Taiwan patent application number 093200319 filed on January 8, 2004.

## DESCRIPTION

### BACKGROUND OF THE INVENTION

[Para 1] 1. Field of the Invention

[Para 2] The present invention relates to a coaxial cable connector for connecting a coaxial cable to a matching coaxial cable connector (jack) for signal transmission and more particularly, to such a coaxial cable connector that can easily and quickly be assembled and installed with the hands without tools.

[Para 3] 2. Description of the Related Art

[Para 4] A regular coaxial cable connector generally comprises a connector body and a thin layer connecting tube. The thin layer connecting tube is fixedly fastened to the coaxial cable by a crimping tool, for enabling the central conductor of the coaxial cable to be suspended inside the thin layer connecting tube for connection to the tubular center contact of a matching coaxial cable connector. Because the thin layer connecting tube has a longitudinal seam line, the thin layer connecting tube may break easily when the user crimping the thin layer connecting tube to fix the thin layer connecting tube to the coaxial cable. A conventional coaxial cable connector, which comprises a casing, a barrel rotatably coupled to the casing and defining with an extension of the casing, an annular receiving space, and a coupling member coupled to a rear extension of the casing. The coupling member has a tapered axial hole. Squeezing the coupling member causes the rear extension of the casing to compress the coaxial cable, thereby securing the barrel to the coaxial cable. This design of coaxial cable connector is still not satisfactory in function for the disadvantages below.

[Para 5] The coupling member may be forced to displace and to move away from the casing when the coaxial cable is bent or stretched during installation.

[Para 6] Because the coupling member is coupled to the casing and has an outer diameter greater than the casing and the outer diameter of the matching coaxial cable connector, the coupling member is in the way to hinder the connection of the casing to the matching coaxial cable connector.

## SUMMARY OF THE INVENTION

[Para 7] The present invention has been accomplished under the circumstances in view. It is therefore the main object of the present invention to provide a coaxial cable connector, which can easily and quickly be assembled with the hands without tools. It is another object of the present invention to provide a coaxial cable connector, which can easily and positively be installed to connect a coaxial cable to a matching coaxial cable connector (jack). To achieve these and other objects of the present invention, the coaxial cable connector comprises a first connecting member threaded onto the matching coaxial cable connector (jack), a second connecting member rotatably coupled to the first connecting member and sleeved onto a coaxial cable, a locating barrel mounted on the coaxial cable inside the second connecting member, and a center holding down member, which separates the central conductor of the coaxial cable from the tube of conducting material and to squeeze the tube of conducting material in a stepped center through hole of the second connecting member upon connection of the first connecting member to the matching coaxial cable connector (jack). Further, the first connecting member has an embossed peripheral wall for positioning of the fingers to thread the first connecting member onto the matching coaxial cable connector (jack).

## BRIEF DESCRIPTION OF THE DRAWINGS

[Para 8] FIG. 1 is an exploded view of a coaxial cable connector according to the present invention.

[Para 9] FIG. 2 is a sectional side view of FIG. 1.

[Para 10] FIG. 3 is an elevational assembly view of the coaxial cable connector according to the present invention.

[Para 11] FIG. 4 is a sectional side view of FIG. 3.

[Para 12] FIG. 5 is a sectional view showing the coaxial cable connector fastened to a coaxial cable according to the present invention.

[Para 13] FIG. 6 corresponds to FIG. 5, showing the first connecting member fastened to the matching coaxial cable connector (jack).

#### DETAILED DESCRIPTION OF EMBODIMENT

[Para 14] Referring to FIGS. 1~4, a coaxial cable connector 1 in accordance with the present invention is shown comprising a first connecting member 2, a center holding down member 3, a locating barrel 4, and a second connecting member 5.

[Para 15] The first connecting member 2 is connectable to a matching coaxial cable connector (jack) at an electronic apparatus, having an inner thread 21 spirally extended around the inside wall at one end, an annular inside coupling flange 23 extended around the inside wall at the other end, an inside annular step 22 extended around the inside wall between the inner thread 21 and the annular inside coupling flange 23, and an embossed peripheral wall 24.

[Para 16] The center holding down member 3 is a hollow cylindrical member inserted into the first connecting member 2, having a center through hole 34 axially extended through the front and rear ends thereof, a rear stop flange 31 extended around the periphery at the rear end, a plurality of hooked portions 331 extended around the periphery at the front end and arranged in parallel, a smooth body portion 33 connected between the hooked portions 331 and the rear stop flange 31, and a coupling portion 32 connected between the smooth body portion 33 and the rear stop flange 31.

[Para 17] The locating barrel 4 has a receiving through hole 41 adapted to receive the center holding down member 3, and an inside annular flange 42

for press-fitting onto the coupling portion 32 of the center holding down member 3.

**[Para 18]** The second connecting member 5 is a tubular member sleeved onto the locating barrel 4 against the inside annular step 22 of the first connecting member 2 to a coaxial cable, having an outside annular coupling groove 51 extended around the periphery near one end and coupled to the annular inside coupling flange 23 of the first connecting member 2 and a stepped center through hole 52 with smaller diameter extended around other end away from the outside annular coupling groove 51.

**[Para 19]** The assembly process of the coaxial cable connector 1 is outlined hereinafter with reference to FIGS.1 and 4 again. The center holding down member 3 is inserted into the first connecting member 2, keeping the coupling portion 32, smooth body portion 33 and hooked portions 331 of the center holding down member 3 exposed to the outside of the first connecting member 2, and then the locating barrel 4 is sleeved onto the center holding down member 3 to press-fit the inner annular flange 42 onto the coupling portion 32 of the center holding down member 3, and at final the second connecting member 5 sleeved onto the locating barrel 4 is inserted with force into the inside of the first connecting member 2 and stopped against the inside annular step 22 of the first connecting member 2 to couple the outside annular coupling groove 51 to the annular inside coupling flange 23 of the first connecting member 2. When assembled, the first connecting member 2 can freely be rotated relative to the second connecting member 5.

**[Para 20]** Referring to FIGS. 5 and 6, the coaxial cable connector 1 connects a coaxial cable 6 to a matching coaxial cable connector (jack) 7 at an electronic apparatus (not shown). The coaxial cable 6 comprises a central conductor 61, a tube of conducting material 63 surrounding the central conductor 61, an inner insulative layer 62 holding the central conductor 61 within the tube of conducting material 63 and isolating the tube of conducting material 63 from the central conductor 61, and an outer insulative layer 64 covering the tube of conducting material 63. The coaxial cable 6 is inserted into the stepped center through hole 52 of the second connecting member 5 and the center receiving

hole 41 of the locating barrel 4 to press-fit the inner insulative layer 62 into the center through hole 34 of the center holding down member 3, keeping the central conductor 61 suspended outside the first connecting member 2 and the tube of conducting material 63 and outer insulative layer 64 of the coaxial cable 6 covered on the periphery of the center holding down member 3 and the tube of conducting material 63 engaged with the hooked portions 331 of the center holding down member 3. After connection of the coaxial cable connector 1 to the coaxial cable connector (jack) 7, the first connecting member 2 is threaded onto the matching coaxial cable connector (jack) 7. When threading the first connecting member 2 onto the matching coaxial cable connector (jack) 7, the center holding down member 3 is forced to move axially toward the coaxial cable 6 and to squeeze the tube of conducting material 63 into the stepped center through hole 52 of the second connecting member 5, and therefore the coaxial cable 6 is firmly secured to the second connecting member 5 of the coaxial cable connector 1.

[Para 21] Further, because the first connecting member 2 has an outer diameter greater than the second connecting member 5 and has the embossed peripheral wall 24 for positive grasping of the hand, the first connecting member 2 can easily be threaded onto the matching coaxial cable connector (jack) 7.

[Para 22] A prototype of coaxial cable connector has been constructed with the features of FIGS. 1~6. The coaxial cable connector functions smoothly to provide all of the features discussed earlier.

[Para 23] Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.